California Monthly Climate Summary
May 2010

Weather Highlights

May 2010 was a cooler and wetter than average month for California. According to the Western Region Climate Center's California Climate Tracker, the monthly average temperature was 55.4°F which is 4.2°F lower than the long-term average. With a statewide average of 1.18 inches, precipitation for May was 132% of the long term average.

May 2010 started with a high pressure system moving in behind a strong late-season storm that closed out April. Dry conditions dominated the state the following week until another late-season storm hit the State at week's end. Snow levels associated with this storm fell to 4000' for the northern Sierra Nevada Mountains and 5000 feet in the Southern Sierra and Tulare Basin regions. On the backside of this system, temperatures were as much as 20 degrees below normal. Temperatures moderated with the onshore movement of a ridge while strengthening. A series of cold systems moved across the state the following week bringing cool, blustery weather. The month closed out with a high pressure system moving in bringing warmer temperatures and dry weather.

Preliminary records, reported on the National Weather Service Record Event Report, shows that statewide there were 89 temperature records tied or broken and 6 precipitation records tied or broken for the month. Of the 89 temperature records set in May, 5 were for new high maximum temperatures while 62 were for new low minimum temperatures. Records were set over 17 days of the month. On May 11th, Bishop tied an all-time May low temperature of 25°F. The previous date of this record was May 3rd, 1964. On May 23rd Bishop would tie this record again. May 23rd proved to be a record cold day across California. Twenty-two locations in California ranging from Eureka to Oceanside to South Lake Tahoe to Big Bear Lake all set new low minimum temperature records. San Francisco tied a 1909 record of 47°F on this day while downtown Sacramento tied a 1916 record with a reading of 45°F. Riverside dropped to 38°F on the 23rd breaking the 1950 record of 41°F. Alpine recorded a low temperature of 39°F beating the 1953 record of 43°F. Another long-standing record fell on May 20th when Redding recorded a low temperature of 39°F breaking the old record of 41°F set back in 1901.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 160 stations recorded a minimum temperature below freezing in May while 6 stations reached or exceeded 100°F at least once during the month. Statewide extremes from the CDEC network of temperature gages are shown below. Also shown are the monthly average extremes from the CIMIS network. A table of regional average minimum, mean, and maximum temperatures from the CDEC and CIMIS networks is also shown at the end of the summary.

Precipitation in May ranged from well above average on the North Coast to well below average on the South Coast and Southeast Desert southeast part of the state. For the CDEC precipitation gages for May 2010, the largest amount of precipitation recorded was at Pacific House in the American River Basin with 7.20 inches. This is 375% of the average precipitation for this station for April. At the other end of the spectrum, 9 stations reported zero inches of precipitation for the month. For the CIMIS network, Durham in Butte County topped the precipitation charts with 4.61inches for the month and 20 stations recorded no precipitation. Some CIMIS gages may show large precipitation totals if the gages are not covered during irrigation activities so care should be given to review precipitation data used from this network. The 8-Station Index for northern California precipitation recorded approximately 4 inches in May with 14 days showing precipitation. On average, 2.1 inches of precipitation is recorded for the 8-Station index in May. Statewide, the average precipitation for May was 143% of the long-term average based on the California Data Exchange Center (CDEC) gages. Precipitation percentages by region from the CDEC gages are shown in a table at the end of this document.

CoCoRaHS Update

May 2010 continues California's second year with CoCoRaHS – the Community Collaborative Rain, Hail and Snow Network. This group uses citizen volunteers to record rain, hail and snow data. The users enter the data online at the CoCoRaHS web site. The web site provides the opportunity to see spatial detail of rain and snow patterns in participating states. As of the end of May 2010, California has 665 volunteers signed up spanning 51 of California's 58 counties. The county with the most volunteers at the end of March is Sonoma with 85 volunteers. In May 8,608 reports were recorded for California. The largest daily rain total for CoCoRaHS- CA in May was in Del Norte County with 1.75 inches recorded on 5/26/10. There were 8 hail reports submitted in May from 6 counties. Reports were for pea-size hail. Twenty-seven snow reports were included with the precipitation reports with a 14 inch depth being the largest new snow total from Placer County on the 11th. The largest total snow depth reported was 88 inches in Placer County on the first. To join CoCoRaHS or find more information, please visit http://www.cocorahs.org.

Snowpack and Water Supply Conditions

As of June 1st, the estimated statewide to-date percentage of snowpack was 212%. This is also 65% of the April 1st average. April 1 is considered to be the traditional peak of snowpack accumulation in California. As of June 1st, the northern region (from the Trinity to the Feather and Truckee Basins) shows 23.7 inches of snow water equivalent which is 382% of average for this date. The central region (the Yuba Basin to the Merced/Walker Basins) shows 18.6 inches of snow water equivalent which is 190% of average for this date. The southern region (the San Joaquin Basin to the Kern Basin) shows 13.9 inches of snow water equivalent which is 147% of average for this date. The large numbers are in part due to the cooler than average temperatures which have delayed the melting of the snowpack. The latest water supply index forecast for 2010 shows the Sacramento Basin in the Below Normal category and the San Joaquin Basin in the Above Normal category. Water year 2009 resulted in a Dry

category for the Sacramento Basin and Below Normal for the San Joaquin Basin. Water supply information for California can be found at http://cdec.water.ca.gov/water_supply.html. A historical listing of water year categories for both basins can be found at http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST.

Drought Monitor and Seasonal Outlook

The maps for California's depiction by the Drought Monitor for April 27, 2010 and June 1, 2010 are shown below. The Drought Monitor maps can be found on the National Drought Mitigation Center's (NDMC) website http://drought.unl.edu/dm/. These maps are largely a reflection of precipitation and soil moisture deficit estimates. As of the June 1st depiction, California is depicted in either D0 (abnormally dry), D1 (moderate drought) conditions, or D2 (severe drought) conditions. The coastal regions and the Sierra region are considered drought free. The D2 category is now limited to the northeast corner of the state on the lee side of the Cascades and Sierra. Drought free area in California was 87.0% for the depiction on June 1st. Maps are updated weekly.

The U.S. Seasonal Drought Outlook for June through August from NOAA depicts California with persisting drought conditions in the remaining drought areas as depicted by the Drought Monitor. This forecast is based on climatology. Updates are provided twice per month. Maps and information can be found at http://www.cpc.noaa.gov/products/expert_assessment/seasonal_drought.html.

The California Nevada River Forecast Center has produced some drought monitoring tools for California. These tools look at the frequency associated with precipitation deficits for the Northern California Eight Station Index and the San Joaquin Five Station Index. Another tool looks at the frequency of end-of-month storage for select reservoirs in California. The frequencies of the observations are related to the Drought Monitor's drought categories D0 through D4. These tools can be found at http://www.cnrfc.noaa.gov/climate.php. For May, the Eight Station Index is in drought free conditions for both the 12-month period and for the 24 month period. The Five Station Index is drought free for both periods as well. For the reservoirs for end-of-May storage, Lake Tahoe and Trinity are at aD2 storage, while Oroville and Casitas are at a D1 level. Lake Berryessa, and San Luis are at a D0 level and all other reservoirs on the graphic are considered to be drought-free with the exception of Friant. End-of-May storage at Friant is classified as D4 conditions which is misleading as the reservoir levels were drawn down to make room for the late melting of an above average snowpack.

ENSO Conditions and Long-Range Outlooks

The El Niño/Southern Oscillation (ENSO) is being classified as ENSO neutral conditions. Equatorial sea surface temperature anomalies for the tropical Pacific have transitioned from positive to negative values in the Niño 3.4 during the month of May. The March through May 3-month running mean of the Ocean Niño Index (ONI) is 0.8 which is the eleventh ONI value above the threshold to qualify for an El Niño event.

Five consecutive ONI values need to be above the threshold value of 0.5 for conditions to be classified as an El Niño event. Most forecast models have the tropical sea surface temperatures cooling with the potential onset of La Nina conditions later in the summer of 2010. More information can be found at the Climate Prediction Center's web site:
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/
Updates are posted weekly. The latest three month outlook (June through August) from NOAA indicates a higher probability of above normal temperatures for the southern part of the State and equal chances elsewhere. For precipitation, the State has equal chances for above or below normal precipitation although little precipitation falls during this time period. Outlook plots and discussions can be fount at http://www.wrcc.dri.edu/longrang/. General weather information of interest can be found at http://www.noaawatch.gov/. For anomaly information please see http://www.wrcc.dri.edu/anom/cal_anom.html.

Agricultural Data

May 2010 saw spring planting swing into full gear as well as some harvests. Rice, corn, and cotton planting occurred while alfalfa went through its second cutting of the season. Asparagus was harvested while tomatoes, bell peppers, cantaloupe, honeydew, and watermelon fields were planted. Citrus harvests wound down while the cherry harvest began and the strawberry harvest continued. Almond, apricot, peach, plum, prune and nectarine orchards were sprayed to guard against disease and pests while the walnut bloom neared its completion. Pistachio and pecan blooms peaked during the month as well. Rangeland conditions continued to benefit from the wet spring with nutrient strength improving which decreased the need for supplemental feeding. The wet conditions continued to affect feedlots and dairies with muddy conditions. The mild temperatures were beneficial for milk production. For further crop information see http://www.nass.usda.gov/index.asp.

Other Climate Summaries

California Climate Tracker (new product of Western Region Climate Center)
Golden Gate Weather Service Climate Summary
NOAA Monthly State of the Climate Report

Statewide Extremes (CDEC)

High Temperature – 105°F (Buttercup, Colorado River Desert)
Low Temperature – -10°F (Casa Vieja Meadows, Tulare Basin)
High Precipitation – 7.20 inches (Pacific House, Sacramento Basin)
Low Precipitation – 0 inches (9 Stations)

Statewide Extremes (CIMIS)

High Average Maximum Temperature – 101.6^{0}F (UC San Luis, Imperial County)
Low Average Minimum Temperature – 29.2^{0}F (Big Bear Lake, San Bernardino County)
High Precipitation – 4.61 inches (Durham, Butte County)*
Low Precipitation – 0 inches (20 stations)
*Sometimes irrigation water from sprinklers gets counted as precipitation if the gage is not covered.

Statewide Precipitation Statistics

Hydrologic Region	Region Weight	Basin Reporting			Stations Reporting			% of Historic Average	
		Basins	May	Oct-May	Stations	May	Oct-May	May	Oct-May
North Coast	0.27	5	5	5	19	14	11	205%	104%
SF Bay	0.03	2	2	2	6	5	5	230%	118%
Central Coast	0.06	3	3	3	11	9	8	89.8%	130%
South Coast	0.06	3	3	3	15	13	13	30.2%	110%
Sacramento River	0.26	5	5	5	43	34	32	165%	103%
San Joaquin River	0.12	6	6	6	25	18	18	173%	116%
Tulare Lake	0.07	5	5	5	28	26	26	78.4%	116%
North Lahontan	0.04	3	3	3	14	10	9	83.2%	91%
South Lahontan	0.06	3	3	3	15	8	8	13.1%	151%
Colorado River	0.03	1	1	1	6	5	5	5.0%	168%
Statewide Weighted Average	1	36	36	36	182	144	135	143%	113%

Statewide Mean Temperature Data by Hydrologic Region (degrees F)

Hydrologic Region	No. Stations	Minimum	Average	Maximum
North Coast	29	30.9	49.0	72.8
SF Bay	18	41.2	55.8	74.1
Central Coast	35	42.7	56.9	75.0
South Coast	69	40.9	58.9	82.6
Sacramento	95	29.6	50.8	75.0
San Joaquin	73	32.8	52.8	73.9
Tulare Lake	18	19.0	42.7	69.3
North Lahontan	31	19.1	39.8	61.2
South Lahontan	22	28.2	50.3	72.1
Colorado River Desert	22	53.4	74.5	93.4
Statewide Weighted Average	412	31.6	51.2	74.1

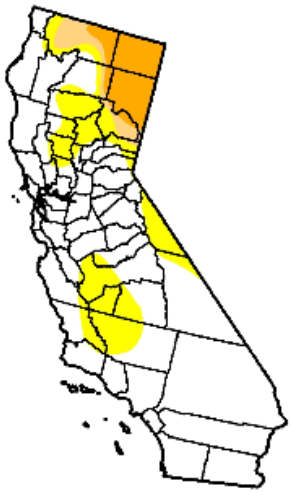
U.S. Drought Monitor

California

April 27, 2010
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	72.8	27.2	9.9	7.1	0.0	0.0
Last Week (04/20/2010 map)	67.6	32.4	9.9	7.1	0.0	0.0
3 Months Ago (02/02/2010 map)	43.2	56.8	18.8	2.2	0.0	0.0
Start of Calendar Year (01/05/2010 map)	6.6	93.4	72.8	9.0	0.0	0.0
Start of Water Year (10/06/2009 map)	0.0	100.0	73.4	45.8	0.0	0.0
One Year Ago (04/28/2009 map)	3.6	96.4	73.0	38.8	0.0	0.0



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

http://drought.unl.edu/dm

Released Thursday, April 29, 2010
Author: Richard Heim, NCDC/NOAA

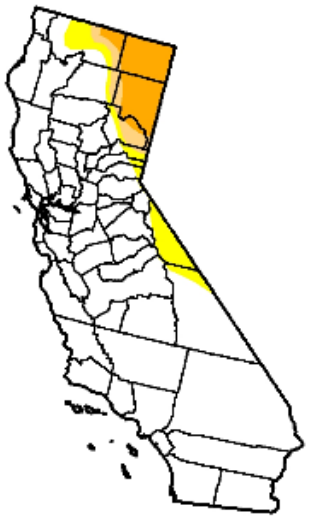
U.S. Drought Monitor

California

June 1, 2010
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	87.0	13.0	8.1	6.0	0.0	0.0
Last Week (05/25/2010 map)	87.0	13.0	8.1	6.0	0.0	0.0
3 Months Ago (03/09/2010 map)	66.7	33.3	10.9	5.9	0.0	0.0
Start of Calendar Year (01/05/2010 map)	6.6	93.4	72.8	9.0	0.0	0.0
Start of Water Year (10/06/2009 map)	0.0	100.0	73.4	45.8	0.0	0.0
One Year Ago (06/02/2009 map)	2.7	97.3	72.3	44.3	0.0	0.0



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The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

http://drought.unl.edu/dm

Released Thursday, June 3, 2010
Author: Brian Fuchs, National Drought Mitigation Center